Kunal Kapila
Bachelor of Science, Mathematics and Scientific Computing
Double Major, Computer Science and Engineering

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Education

- **Indian Institute of Technology, Kanpur** *2014 - 2019 (Expected)*
  Cumulative Grade Point Average 8.9/10
- **All India Senior School Certificate Examination (AISSCE)**
  Central Board of Secondary Education (CBSE), Govt. of India; Delhi Public School, R. K. Puram
  - 98.2% (School Topper) with National top 1% in Computer Science & Chemistry *2014*
  - Cumulative Grade Point Average (CGPA) 10/10 *2012*

Academic and Co-Curricular Achievements

- Secured AIR 116 in **JEE Mains** 2014 amongst 1.5 million candidates
- Secured AIR 1306 in **JEE Advanced** 2014 amongst 150,000 candidates
- Secured Rank 29 in **ACM-ICPC Amritapuri** Onsite Round 2015 amongst 200 college teams that qualified for it
- Secured Rank 54 in **ACM-ICPC Amritapuri** Online Round 2015 amongst 1500 college teams
- **Microsoft Code.Fun.Do**
  - **Winner 2014-15**: Graphing app to plot implicit 2D Mathematical Functions for Windows Phone Platform
  - **National 5th, Coding Milestone, Finalist Forum 2014-15**: Educational app to teach students programming on the go for Windows Phone Platform; Implemented Scratchpad, Lessons & Daily Challenges
  - **Winner 2015-16**: Front-end for open source program simulation code for Microsoft Windows Store
- Qualified for & attended **International Olympiad of Informatics Training Camp** 2014
- **Kishore Vaigyanik Protsahan Yojna** Fellow 2013, Department of Science & Technology, Government of India
- **Junior Science Talent Search Examination** Scholar 2012, Directorate of Education, Government of Delhi
- **National Talent Search Examination** Scholar 2010, conducted by NCERT, Government of India

Work Experience

- Development Intern, **IITK NYC Office** *MAY 2016 - current*
  Supervisor: Prof. Manindra Agrawal, Department of CSE, IIT Kanpur
  - Working on the backend of a scale-able web application using Scala with Akka
  - Currently working on an efficient way of implementing history for editable items in a stream of objects
- Web Developer (Intern), **Elanic**, Bangalore *DEC 2015*
  - Full stack developer: MongoDB, AngularJS and NodeJS along with Restify framework
  - Built RESTful APIs for notification, engagement(likes, comments) and search (using Elastic Search) modules

Projects

- **PhotoProof**: Cryptographic Image Authentication *JUN 2016 - current*
  Supervisor: Prof. Nasir Memon, (Department Head) Department of CSE, NYU School of Engineering
  - Understood the theoretical model for image authentication based on Proof-Carrying Data (PCD)
  - Currently working on a practical implementation of the idea described in the paper using libsnark's PCD
- **Cimulator**: a Visual & Interactive Tutoring system *Click here for **Tutorial*** *MAY - JUL 2015*
  Supervisor: Prof. Amey Karkare, Department of CSE, IIT Kanpur *Tested by 400 students in Fall* 2015
  - Interpreter for C language in python, modelled memory artificially, handled external header files & overflows
  - Prompts user with possible corrections for runtime errors instead of crashing abruptly (unlike gcc)
  - Web interface to **simulate C codes** that were interpreted by Cimulator to provide visual cues to the user

Technical Skills

- **Languages**:
  C (*Proficient*), C++ (*Expert*), Python (*Expert*)
- **Web Development**:
  HTML, CSS, Javascript, Bootstrap, PHP, Node.js (with Express, Restify), AngularJS, MySQL, MongoDB
- **Tools**:
  LaTeX, Git, Vim, OpenGL, SDL, GDB, MATLAB

Course Projects

- **Animation Movie** *OCT - NOV 2015*
  Supervisor: Prof. Vinay P. Namboodari, Department of CSE, IIT Kanpur
  - Rendered a 3-minute movie clip using **OpenGL** (Graphics Library), **SDL** (Simple DirectMedia Layer)
  - Implemented Keyframe animation, DeBoor's B-Spline Interpolation, Texture Mapping, Lighting, Physics-based collision detection, Dynamic Programming and integrated audio
- **Randomness Certification using Quantum Non-Locality** *FEB - APR 2016*
  Supervisor: Prof. Rajat Mittal, Department of CSE, IIT Kanpur
  - Understand Quantum non-locality (Bell inequalities and non local games), and use this knowledge to study randomness certification, and a protocol to generate random strings of numbers
  - Click **here** to view the preliminary project report
- **Students' Gymkhana Form Automation** *MAR - APR 2016*
  Supervisor: Prof. Sumit Ganguly, Department of CSE, IIT Kanpur *Code: Github Link*
  - Automate a commonly used Students' Gymkhana form: Senator Seed Fund

Relevant Courses Undertaken

Mathematics	Mathematics I (Functional Analysis)	Mathematics II (Linear Algebra)
	Probability & Statistics	Mathematical Logic
	Abstract Algebra	Commutative Algebra (*)
	Real Analysis	Introduction to Fourier Series (*)
	Complex Analysis	Several Variable Calculus (*)
Computer Science	Fundamentals of Computing (A*)	Data Structures and Algorithms (A*)
	Algorithms II (*)	Theory of Computation (*)
	Modern Cryptology	Quantum Computing
	Principles of Database Systems	Introduction to Computer Graphics
Others	Introduction to Economics (A*)	Introduction to Philosophical Logic

(A*) Awarded for exceptional performance (*) Courses in Progress

Positions of Responsibility

- **Coordinator, Programming Club**, Science and Technology Council, IIT Kanpur *MAR 2016 - current*
  - Conducted several lecture series, workshops and competitions on Algorithmic Programming, Open Source Development, and Web Development for students of the campus community
  - Organised the summer camp and mentored over 60 students who completed projects in the field of Web & App Development, Augmented Reality, Machine Learning, Computer Vision and Ethical Hacking
- **Head Web, Antaragni**, Students' Gymkhana, IIT Kanpur *MAR 2016 - current*
  - Conceptualised and designed the website for Antaragni 2016 (*http://antaragni.in/*)
  - Implemented NodeJS server with Express framework, along with MongoDB & AngularJS
  - Dynamically rendered the events, contacts, sponsors page and schedule from the database
- **Student Member, Senate Undergraduate Committee (SUGC)**, IIT Kanpur *(2014-15) & (2015-16)*
  - Amongst the **4** student members responsible for representing the opinions of more than 3500 undergraduate students in campus on academic matters in SUGC, a standing committee of the Institute Senate
  - Worked on proposals like remedial programme for academically deficient students, Undergraduate Teaching Assistants & Lateral Entry for Bachelors programme in Physics, Chemistry and Mathematics